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EXAMINER

SWICKHAMER, CHRISTOPHER M

ART UNIT

PAPER NUMBER

2697

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11

Please find below and/or attached an Office communication concerning this application or proceeding.

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**Office Action Summary**

Application No.

09/422,347

Applicant(s)

OOMS ET AL.

Examiner

Christopher M Swickhamer

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— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 February 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

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***Response to Amendment***

This Office Action is in response to the amendment filed on 02/27/03. The Examiner approves the proposed drawing correction. Amended claims 1-10 have been entered, as have new claims 11-16. Claims 1-16 are pending. Currently no claims are patentable.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Cidon (U.S. Patent No. 5,309,433). Referring to Claim 1, Cidon discloses a device for compressing a list of destination addresses of a multicast message comprising means to detect a common prefix in at least two destination addresses of said list (col. 2, lns. 25-32), characterized in that said device for concatenating Automatic Network Routing (ANR) labels representing the addresses of the common nodes (routers and hosts) and Tree Multicast Mode (TMM) tree addresses to multicast the packets to the branches in the network trees in the routing field of the packet (compressing further comprises means to generate a sequence of suffixes of said at least two destination addresses, and means to constitute a compound destination address, adapted to add said sequence of suffixes to said common prefix to thereby constitute said compound destination address, col. 2, lns. 33-43).

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- Referring to Claim 7, Cidon discloses a method for compressing a list of destination addresses of a multicast message whereby common nodes labels are generated, ANR (prefix), for at least two destination addresses of said list, characterized in that further a tree address (sequence of suffixes) is generated of said at least two destination addresses and a compound destination address is constituted by adding said ANR labels to the tree addresses (sequence of suffixes to said common prefix, col. 1, lns. 33-66).

*Claim Rejections - 35 USC § 103*

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2, 4, 5-6, 8, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cidon in view of Johnson (U.S. Patent No. 6,247,059). Referring to Claim 2, Cidon discloses all of the limitations of Claim 1, but does not expressly disclose that the destination addresses consist of Internet Protocol addresses. Johnson discloses a system that uses Internet Protocol addresses as destination addresses (col. 8, lns. 22-26). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to use the multicast packet routing system of Cidon using Internet Protocol addresses as destination addresses. One of ordinary skill in the art would have been motivated to do this since Internet Protocol addresses can be used to route packets for Multicast transmission over the Internet (col. 8, lns. 42-56).

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- Referring to Claim 4, Cidon discloses all of the limitations of Claim 1 as set forth above, where the destination addresses consist of compound addresses (Fig. 6, col. 2, lns. 25-32).

- Referring to Claim 5, Cidon discloses all of the limitations of Claim 1, characterized in that said device is incorporated in a node (host, col. 1, lns. 13-32) of a communications network, but does not expressly disclose the network has connectionless capabilities. Johnson discloses a system with connectionless multicast transmission capabilities (col. 4, lns. 42-48). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the multicast packet routing system of Cidon with connectionless transmission capabilities. One of ordinary skill in the art would have been motivated to do this since connectionless internode communication of packets can be transmitted via the Internet (col. 4, lns. 34-38).

- Referring to Claim 6, Cidon discloses all of the limitations of Claim 1, characterized in that said device is incorporated in a node (router, col. 1, lns. 12-32) of a communications network having forwarding capabilities, but does not expressly disclose the system is connectionless. Johnson discloses a connectionless packet transmission system (col. 4, lns. 34-56). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the multicast packet routing system of Cidon as a connectionless transmission system. One of ordinary skill in the art would have been motivated to do this since connectionless internode communication of packets can be transmitted via the Internet (col. 4, lns. 34-38).

- Referring to Claim 8, Cidon discloses a node (Router) of a communications network having multicast forwarding capabilities, characterized in that said node (router) incorporates a device for compressing a list of destination addresses of a multicast message as defined by claim

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1 (col. 1, lns. 33-49), but does not expressly disclose that the system is connectionless. Johnson discloses a multicast packet system that is connectionless (col. 4, lns. 34-56). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the multicast packet routing system of Cidon as a connectionless system. One of ordinary skill in the art would have been motivated to do this since connectionless internode communication of packets can be transmitted via the Internet (col. 4, lns. 34-38).

- Referring to Claim 10, Cidon discloses a node (Host) of a communications network having multicast transmission capabilities, characterized in that said node (host) incorporates a device for compressing a list of destination addresses of a multicast message as defined by claim 1, but does not expressly disclose that the system is connectionless. Johnson discloses a multicast packet system that is connectionless (col. 4, lns. 34-56). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the multicast packet routing system of Cidon as a connectionless system. One of ordinary skill in the art would have been motivated to do this since connectionless internode communication of packets can be transmitted via the Internet (col. 4, lns. 34-38).

9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cidon in view of Alkhatib (U.S. Patent No. 6,430,623). Referring to Claim 3, Cidon discloses all of the limitations of Claim 1 as set forth above, characterized in that said list of destination addresses consist of compound addresses (Fig. 6, col. 2, lns. 25-32), but does not expressly disclose there are also IP addresses. Alkhatib discloses a system with IP addresses as well as domain name information (compound address, col. 3, lns. 15-28) for local address information. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the

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multicast packet routing system with compound addresses of Cidon, with an IP address. One of ordinary skill in the art would have been motivated to do this since the system could use either a local or global address to route data in the network (col. 3, lns. 25-28).

10. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cidon and Johnson in further view of Alkhatib. Referring to Claim 9, Cidon and Johnson disclose a node (router) with all of the limitations of Claim 8, but do not disclose a routing table memory addressed by the compound address. Alkhatib discloses a routing table used to find a destination address when an IP packet is received. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the multicast packet routing system of Cidon and Johnson, with a routing table. One of ordinary skill in the art would have been motivated to do this since a routing table can store IP addresses for hosts in the networks closet to the router (col. 6, lns. 60-65).

11. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cidon in view of Srinivasan (article, see 892). Referring to claims 11, 12, and 13, Cidon discloses a device for compressing according to claim 1, but does not expressly disclose wherein said means to detect a common prefix detects octet/nibble/bit-aligned prefixes. Srinivasan discloses a system using common prefixes for routing of packets of distinct lengths. The prefix length can be length 1 (Figure 1), or length 4 or 8 (pg. 4, col. 1). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine make the lengths of the prefixes a set length. One of ordinary skill in the art would have been motivated to do this since restricted prefix lengths lead to faster searches for routing purposes (pg. 4, first complete paragraph).

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12. Claims 14-16 rejected under 35 U.S.C. 103(a) as being unpatentable over Cidon in view of Srinivasan. Referring to claim 14, 15, and 16, Cidon discloses a method for compressing according to claim 7, but does not expressly disclose wherein detecting a common prefix further comprises detecting octet/nibble/bit -aligned prefixes. Srinivasan discloses a system using common prefixes for routing of packets of distinct lengths. The prefix length can be length 1 (Figure 1), or length 4 or 8 (pg. 4, col. 1). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine make the lengths of the prefixes a set length. One of ordinary skill in the art would have been motivated to do this since restricted prefix lengths lead to faster searches for routing purposes (pg. 4, first complete paragraph).

### *Response to Arguments*

13. Applicant's arguments filed 02/27/03 have been fully considered, but they are not persuasive. In response to the argument on page 11, last paragraph, the applicant argues that Cidon does not teach that the concatenated information in the routing field has been derived by a detection of a common prefix in at least two destination addresses, as recited in claim 1. The Examiner respectfully disagrees. The Cidon reference teaches sending multicast information over a common path using ANR, and then using the TMM address to send the packet to unique end users (Fig. 1, col. 2, lns. 25-32, col. 1, lns. 33-col. 2, lns. 22). This implies that the device of Cidon would have to detect the common path of the multicast packet, and use this information to develop the automatic network routing (ANR) labels, then use the tree multicast mode (TMM) address at the multicast node to send the multicast packet on distinct paths to the end users. The device of Cidon must be able to detect the path the multicast packets have in common to send the



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packets to the unique end users, similar to claim 1. The prefix of the applicant's invention is used to detect a common path in the packets, thus Cidon anticipates claim 1.

- In response to the argument on the last two lines of page 11, the applicant argues that Cidon does not teach compressing the ANR labels if a common prefix is present. The Examiner respectfully disagrees. The purpose of the prefix in the applicant's invention is to remove redundancy in the header for routing the data, and to use the prefix to identify the common path the packet traverses to shorten the header so that the packet can be sent to the unique end users without additional header overhead. The prefix identifies the next node that the multicast packets have in common so that all packets can traverse to next node with one prefix, as opposed to giving each packet separate headers (Fig. 7, col. 2, lns. 25-60). The Cidon reference uses the ANR labels to send the packet over a common path; there is one label to identify the next node to send all of the multicast packets to (col. 2, lns. 25-60, col. 2, lns. 4-22). Instead of giving each packet there own unique header to send the packet to the end users, all packets going over the same path have one label identifying the next node, similar to how the prefix identifies the next node without giving each node their own unique header. Thus Cidon anticipates claim 1.

- In response to the argument on page 12, first full paragraph, the applicant argues that Cidon does not teach generating a sequence of suffixes composed of multiple destination addresses, as recited in claim 1. The Examiner respectfully disagrees. Cidon discloses that the user node generates a TMM address to direct the packet to all end nodes in the multicast tree (col. 2, lns. 25-32). The TMM address can be viewed as a sequence of suffixes that are composed of information to send the packet to the end nodes, similar to claim 1 since they serve the same purpose. Thus Cidon anticipates claim 1.

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- In response to the argument on page 12, second full paragraph, the applicant argues that Cidon does not teach the addition of a common prefix to a generated series of suffixes. The examiner respectfully disagrees. Cidon discloses using the combination of ANR labels to send the multicast packet over a common path, and the TMM address to send the multicast packets to the end nodes. The applicant's invention uses the prefix to send the multicast packet over a common path, and uses the series of suffixes to send the multicast packet to the end nodes, similar to claim 1. Thus Cidon anticipates claim 1.

- In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

- In response to the argument on page 14, last paragraph, the applicant argues that there is no motivation to combine Cidon and Johnson et al, since Johnson et al is referenced of teaching a connectionless network. The Examiner respectfully disagrees. This argument is piecemeal analysis. Cidon discloses the system is to be used for packet communications (abstract). Cidon does not expressly disclose the system is connectionless. The following references are cited to show additional evidence. Dobbins et al (US PGPUB 2002/0029288 A1) discloses that it is known that multicast transmission can done over the internet, which is a connectionless network for packet delivery (paragraph 40, 133, 127-139). Srinivasan discloses using prefixes for faster routing of packets over the Internet (page 1). Thus it is known that packet networks, such as the Internet, can handle multicast cells, and that routing of cells can use prefixes for faster routing. Thus there is motivation to combine Cidon and Johnson et al.

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- In response to the argument on page 16, last paragraph, the applicant argues that there is no motivation to combine Cidon with Alkhatib. The Examiner respectfully disagrees. This argument is piecemeal analysis. Cidon does not expressly disclose using IP addresses in the packet network. Srinivasan gives further evidence to support this combination. Srinivasan discloses a packet based network, the Internet, where the compressed addresses are IP destination addresses (page 1, col. 2). Thus compressing IP addresses is known in the art and there is motivation to combine Cidon and Alkhatib.

- In response to the argument on page 17, fourth paragraph, the applicant argues that there is no motivation to combine Cidon and Johnson et al with Alkhatib. The argument states that Alkhatib does not disclose using prefixes, suffixes, and the addition of prefixes and suffixes. The Examiner respectfully disagrees. This is piecemeal analysis. Cidon does not expressly disclose using a routing table in the packet network. Srinivasan provides additional evidence to support this combination. The most well-known packet communications network is the Internet. Routing tables are commonly used to route data through a network (pg. 1, col. 2). Thus since using routing tables to forward information across a packet network is known in the art, there is motivation for the combination of Cidon and Johnson et al with Alkhatib.

- The Examiner therefore concludes the rejections to claims 1-16 under 102(b) and 103(a) stand.

### ***Conclusion***

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Waldvogel et al, *Scalable High Speed IP Routing Lookups*, Proceedings of SIGCOMM '97", September 1997.
- Nilsson et al, *Fast Address Lookup for Internet Routers*, Proceedings of IEEE Broadband Communications 98, April 1998.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M Swickhamer whose telephone number is (703) 306.4820. The examiner can normally be reached on 8:00-4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (703) 305.4798. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308.9571 for regular communications and (703) 827.9314 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305.3900.

CMS

March 24, 2003

  
RICKY NGO  
PRIMARY EXAMINER